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J Health Care Poor Underserved. Author manuscript; available in PMC 2015 November 01.

Published in final edited form as:
J Health Care Poor Underserved. 2014 November ; 25(4): 1679–1697. doi:10.1353/hpu.2014.0156.

Factors influencing health care access perceptions and care-seeking behaviors of immigrant Latino sexual minority men and transgender individuals: Baseline findings from the HOLA intervention study

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Abstract

Little is known about immigrant Latino sexual minorities' health seeking behaviors. This study examined factors associated with perceptions of access and actual care behaviors among this population in North Carolina.

Methods—A community-based participatory research partnership recruited 180 Latino sexual minority men and transgender individuals within preexisting social networks to participate in a sexual health intervention. Mixed-effects logistic regression models examined factors influencing health care access perceptions and use of services (HIV testing and routine check-ups).

Results—Results indicate that perceptions of access and actual care behaviors are low and affected by individual and structural factors, including: years living in NC, reported poor general health, perceptions of discrimination, micro-, meso-, and macro-level barriers, and residence in a Medically Underserved Area.

Discussion—To improve Latino sexual minority health, focus must be placed on multiple levels, individual characteristics (e.g., demographics), clinic factors (e.g., provider competence and clinic environment), and structural factors (e.g., discrimination).

Keywords

Latino; sexual minority; immigrant; health care access

Latino communities in the southeastern United States (U.S.), including North Carolina (NC), are rapidly growing.[1] Between 2000 and 2010, the Latino population increased by 57.3% in the South and by 111.1% in NC. [2] Further, 48% of the Latino population in NC is foreign-born (primarily from Mexico).[3] The Latino population bears a disproportionate burden of negative health outcomes, including diabetes, cancer (e.g., stomach, liver, and cervical), liver disease, work-related injuries, obesity,[4,5] and HIV and other sexually transmitted diseases (STDs).[5-7] Furthermore, the immigration process is often linked to increased health risk behaviors, including the use of substances (i.e., alcohol, tobacco, and other drugs) or sex as a coping strategy for depression and loneliness (e.g., lower social support when

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unaccompanied by family),[8] and can contribute to negative health outcomes. Other individual identities (e.g., gender and sexual orientation) can further intensify health risks, especially for HIV and other STDs.[6] For instance, Latino men who have sex with men (MSM) constitute the majority (81%) of new HIV infections among Latino men and 20% of new HIV infections among all MSM.[6] Transgender people also have disproportionately higher rates of HIV. [9] The intersection of Latino ethnicity and citizen status (i.e., being undocumented) also increases risk in these groups.[10]

Access to health care services is an essential component of general health ensuring both prevention and treatment; however, immigrant communities have particularly low rates of care-seeking behaviors.[11] Immigrant Latinos' access is affected by a variety of individual and structural barriers that can affect perceptions of and actual access to health care services. Low rates of insurance coverage and high poverty rates may influence low care-seeking behaviors.[4] Specifically, individual insurance and socioeconomic status partially explain why recently arrived first-generation immigrant Latino adolescents are less likely to receive routine physical exams compared to those less recently arrived and U.S.-born.[12] Further, those who are undocumented are less likely to have usual sources of health care and likely to receive even less care.[8,13]

Low care access is further limited by the lack of health care infrastructure in both urban and rural parts of the U.S. that lack long histories of immigration and where few bilingual and bicultural services are offered; much of the Southeast is such a region.[3,4,14-16] The current immigration climate also has implications for both perceptions of and actual access to health care. For instance, in one NC county allegations were made that public health department records had been used in deportation proceedings, drawing media attention to the issue and raising confidentiality concerns.[17,18] In general, the fear of deportation and distrust of providers contributes to an avoidance of formal health care services, resulting in lower levels of exposure to preventive health services.[8,19] In addition, transportation to clinics can be particularly problematic for Latino individuals due to policies related to obtaining driver's licenses and enforcement of immigration policies by local law enforcement, especially during traffic stops.[20-24]

Although much work with Latino communities has focused on care-seeking behaviors of Latina women,[25] Latino men are also less likely than others to seek services.[8,26] Poverty, labor conditions, racial and ethnic discrimination, and conflicting cultural and social norms may challenge Latino men's ability to seek care.[8] This gender difference may also be partially attributed to traditional notions of masculinity that have been associated with engagement in risk behaviors and delayed care-seeking behaviors.[8] Issues related to Latino men's masculinity might be further complicated by sexual identity and orientation;[8,27] the intersection of these identities likely has implications for risk and accessing care.

Care-seeking behaviors are particularly complex for individuals with multiple stigmatized identities–gender, race, ethnicity, sexual and gender identity/orientation, documentation status, and socioeconomic status.[28] Latkin and colleagues[29] proposed a dynamic social systems model to examine the influence of micro-, meso-, and macro-level structures on HIV prevention and care for a comprehensive understanding of how different structural

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factors (e.g., resources and settings) interplay to affect health. Here, we expand this systems framework to explore perceptions of primary health care access among a population at elevated risk for HIV acquisition. Briefly, macro-level structural factors refer to the political, economic, and cultural context, as well as the larger social institutions that shape care behaviors more broadly (e.g., access to driver's licenses, enforcement of immigration policy, discrimination related to race, ethnicity, and sexual orientation). The meso-level structural factors include systems at work in the more proximal institutions with which Latinos are involved (e.g., clinic structure–hours, payment scale). Micro-level structural factors refer to the immediate demographic and social context within which individuals' interactions with others take place (e.g., insurance status and knowledge of health services).[29,30]

In light of existing disparities in health outcomes and care access and utilization, understanding factors that support and impede care-seeking behaviors among immigrant Latinos is important. Accordingly, the goals of the current study were to describe perceptions of care access and care behaviors and explore individual, social, and structural factors that influence the care-seeking behaviors of immigrant Latino sexual minority men and transgender individuals in NC.

Methods

Participants and data collection

The HOLA intervention was designed in response to Latino sexual minority men and transgender individuals expressed desire for HIV prevention during the initial implementation of the HoMBReS (Hombres Manteniendo Bienestar y Relaciones Saludables (Men Maintaining Wellbeing and Healthy Relationships)) intervention;[8,31] its development has been described elsewhere.[32] Briefly, the HOLA intervention development was guided by a community-based participatory research (CBPR) partnership in NC comprising representatives from public health departments, AIDS service organizations, universities, and the local Latino community (including immigrant Latino gay men and Latino-serving community-based organizations), all of whom have been working together for a decade to improve the health of vulnerable populations. This ongoing partnership is committed to using CBPR to blend lived experiences with sound science to develop interventions with increased cultural congruence and effectiveness to reduce health disparities.[33-35]

The HOLA intervention uses existing social networks and community lay health advisors (*Navegantes*) to promote condom use and testing among social networks of immigrant Latino gay and bisexual men, MSM, and transgender people over the age of 18 in NC. They work both formally and informally with members of their social networks.[32] Representatives of HOLA recruited 21 social networks of Latino gay and bisexual men, MSM, and transgender people; each network had nine members. One representative from each social network was selected, trained, and supported to serve as a *Navegante* whose primary role at baseline was to recruit social network members. The research design includes intervention and delayed-intervention groups; this analysis focuses on baseline data from both groups.

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The CBPR partnership developed the assessment iteratively based on formative studies[27,36,37,38] and thorough literature review. Validated Spanish-language scales were used when available. The assessment, based on self-report, was interviewer-administered by bilingual and bicultural community-based organization staff (who are members of the CBPR partnership) to overcome low literacy and poor vision. There were minimal refusals. Most items had binary, categorical, or Likert-scale response options. The assessment took 45-90 minutes to complete, depending on the skip pattern of the participant. The assessment was administered both to the *Navegantes* and to the social network members with whom they were working. Participants received $30 to compensate them for their time. The Institutional Review Board of Wake Forest School of Medicine provided human subject review and study oversight.

Measures

The primary outcome variables of interest included: perceptions of access to urgent and non-urgent care ("How would you rate your access to urgent or lifesaving care/non-urgent or routine care in the U.S.?" comparing poor/fair with good/very good), having an HIV test in the past 12 months (yes/no), and ever attending a general routine check-up (yes/no).

Demographic characteristics included: age, gender identity (male and transgender), educational attainment (less than high school, at least high school), employment status (employed year round, seasonal, unemployed, other), length of time living in NC in years and months, relationship status (single, not dating anyone special, dating someone special, partnered or married but sex with others, partnered or married and no sex with others), and a general health assessment comparing one's own health with that of other people their age (scale from excellent to poor).[39] To examine community context that may affect access, each participant's home address was geocoded as being in an urban or rural location and whether this location was within a Medically Underserved Area (MUA) (index including ratio of primary care providers, poverty concentration, infant mortality rate, and population over 65 years old).[40-42] The geocoding and mapping processes allowed layering of community-level information for each geocoded participant.

Behavioral variables included substance use (alcohol, marijuana, and cocaine) and sexual behaviors. Sexual behaviors assessed included number of male sexual partners in the last six months and condom use during most recent insertive and/or receptive anal sex with men.

Individual contextual variables were measured using several multi-item scales. Depressive symptoms were measured by the Center of Epidemiological Studies Depression (CES-D) Scale, a widely used 20-item scale (alpha = 0.85). As recommended, we defined clinically significant depressive symptoms as a score of 16 or higher.[43] Two perceived discrimination scales—racial (alpha = 0.81) and sexual (alpha = 0.88) discrimination—were used; they were careful adaptations of a psychometrically validated scale.[44] Respondents were asked "During your time in North Carolina, in your day-to-day life, how frequently have any of the following things happened to you because of your race/sexual orientation?" followed by a 10-item list of experiences (e.g., "Others acted fearful of you"; "Others acted like you were dishonest"). The response options for recording how often each experience occurred were "Never," "Sometimes," "Frequently," "Very frequently," and "Don't know." Acculturation

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was measured using the Short Acculturation Scale for Hispanics.[45] The scale was designed to analyze three factors: language use, media, and ethnic social relations or socialization. The scale ranged from 1 (not at all acculturated) to 5 (fully acculturated) (alpha = 0.87). The Index of Sojourner Social Support (ISSS) Scale assessed social support.[46] The ISSS Scale takes into consideration multiple core functions, including emotional and instrumental support (respective alphas = 0.94, 0.96). This scale has been found to be valid and reliable among immigrant Latino MSM.[36]

Structural barriers to care were considered at the macro-, meso-, and micro-level structures as described by Latkin and colleagues.[29] Macro-level barriers appeared on a three-item additive scale (distance to closest clinic, lack of transportation, and immigration status) (α = 0.48). Meso-level barriers appeared on a five-item additive scale of clinical barriers (availability/hours, language, amount of time to get an appointment, previous visit took too long, and high cost) (α = 0.63). Finally, the micro-level barriers appeared on a six-item additive scale (health insurance status, could not get time off from work, lack of knowledge about where to obtain services, concerns about being treated poorly, perception of eligibility for health services, and confidentiality concerns) (α = 0.60). Individual barrier items by level are outlined below in Table 3.

Analysis

Descriptive statistics, including frequencies and percentages or means, standard deviations (SD), and ranges, were calculated. Univariate and multivariable analyses were conducted using mixed-effects logistic regression models to examine individual characteristics, behaviors, and barriers influencing perceptions of health care access and use of services for each of the four outcomes: perceived urgent care access, perceived non-urgent care access, HIV testing within the past 12 months, and ever attending a routine check-up.

Characteristics significant at the 0.25 level in univariate analyses were included in multivariable modeling;[47] levels such as 0.05 used as a cut-off for inclusion in multivariable models can fail in identifying variables known to be important.[48] All modeling adjusted for possible within-network clustering of outcomes using a random effect for social network.[49] Mixed-effects logistic regression analyses were performed using the statistical procedure GLLAMM in Stata Version 12. In the case of missing item-level data for a particular scale, if an individual was missing less than 20% of the items, an individual's mean for the other items was substituted for the missing item.[50] Multiple imputations for missing data on covariates were carried out using the ICE procedure in Stata.[51] A two-sided p-value of .05 was considered statistically significant in multivariable models. Adjusted odds ratios (AORs) and their 95% confidence intervals (CI) were estimated.

Participants' self-reported addresses were geocoded using the U.S. Streets Geocode Service (ArcGIS online) and mapped with the USA Urban Areas layer file available in ArcMap 10.1 software (Environmental Systems Resource Institute, Redlands, CA).

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Results

Participant characteristics

Demographic and behavioral characteristics of the 180 participants with complete outcome data are shown in Table 1. The average age of the male (81.7%) and transgender (18.3%) participants was 30.1 years (SD=7.3); approximately half had at least a high school education (49.7%) and most were not employed year round (74.8%). The majority had lived in NC on average for eight years (SD=4.5) and currently resided in an urban (83.6%), non-MUA (74.1%) (see Figure 1). Participants reported moderate general health. Rates of heavy episodic drinking were relatively high (67.3%), as were rates of cocaine use during the past six months (17.2%). More than half had two or more male sex partners in the past six months (51.8%) and slightly more than a third used condoms the last time they had anal sex (36.5%). Approximately half of the sample rated their access to urgent (48.3%) and non-urgent (53.9%) care as poor or fair. More than half had received an HIV test in the past year (57.2%) and 15% had never seen a health care provider.

Contextual variables

Individual contextual variables and the discrete barrier items used to create the additive micro-, meso-, and macro-level barrier scales are highlighted in Tables 2 and 3, respectively. The individual barriers items were highly correlated (0.47-0.57) but even including them separately in the multivariable model they did not retain significance. Participants generally had low levels discrimination and moderate levels of depression, acculturation, and social support.

All barrier items, with the exception of distance to the clinic and feeling they would be treated poorly at the clinic, were endorsed by over a quarter of the participants (range 28.2%-62.6%) (Table 3).

Outcome variables

Perceptions of access to urgent care—Univariate analyses (Table 4) indicated not living in an MUA (p=.023); macro- (p=.048), meso- (p=.004), and micro- (p=.028) level barriers; and experiences of perceived racial (p=.018) and sexual discrimination (p=.003) were significantly associated with perceiving access to urgent care as poor or fair. In multivariable analyses (Table 4), including all variables with p<.25 (educational attainment, employment status, and years lived in NC), not living in an MUA and experiencing day-to-day sexual discrimination retained statistical significance from the univariate models. All other variables were not statistically significant.

Perceptions of access to non-urgent care—Univariate analyses indicated not living in an MUA was significantly associated with perceiving access to non-urgent care (p=.028) as poor or fair and retained significance in the multivariable analyses (Table 5). All other variables with p< .25 (employment status, years in NC, and perceived sexual discrimination) were not statistically significant in the multivariable models.

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HIV testing in past 12 months—Having poor health was significantly associated with not having or being less likely to have received an HIV test in the past 12 months in both univariate (p=.034) and multivariable (AOR=0.66, p=.017) analyses (Table 6). All other variables with p<.25 (years in NC, general health, and macro- and meso-level barriers) were not statistically significant in the multivariable models.

Ever attending routine check-up—The only factor associated with never having received a regular check-up was living fewer years in NC in both the univariate (p=.003) and multivariable (AOR=0.84, p=.004) analyses (Table 7). All other variables with p<.25 (educational attainment, general health, MUA, and micro-level barriers) were not statistically significant in the multivariable models.

Discussion

This study examined perceptions of access to care and actual care behaviors of 180 immigrant Latinos identifying as sexual minority men or transgender individuals within communities with limited transportation and bilingual public health infrastructure, and where enforcement of immigration policies by local officials has contributed to general distrust and fears. Within this socio-political context, this population may have a heightened discomfort seeking health care services. Results confirm that perceptions of access and actual care behaviors were low and affected by a multitude of individual and structural factors. These factors included: micro-, meso-, and macro-levels of barriers, increased perceptions of day-to-day discrimination, living outside an MUA, fewer years living in NC, and reported poor general health. Notably, more of these factors (e.g., not living in an MUA and discrimination) affected perception of care access than factors (e.g., health status, years in NC) affecting actual care behaviors. This could be attributable to awareness of local health service resources and the efforts of local organizations to conduct venue specific or mobile based HIV testing targeting Latino communities. Continued attention to these issues is essential in order to prevent significant health issues, while promoting quality of life and lowering medical costs (e.g., misuse of urgent care, forgoing preventive services, and delaying treatment).

Latkin and colleagues'[29] dynamic social systems framework was useful for considering how barriers at different levels intersect to challenge individuals' ability to seek care. Barriers at all levels, including macro, meso, and micro, reduced perceptions of access to urgent care in univariate models. As immigrant Latinos (especially more recently arrived individuals) are more likely to forego routine health care[12] and rely on urgent care more frequently,[4] addressing these barriers is essential. Given that the majority of individual items that made up the barrier scales (e.g., transportation, cost, and confidentiality concerns) were endorsed at high levels, it is likely that these factors are important for care behaviors, as well. The high correlation between items, however, may have reduced their significance in the multivariate models.

Discrimination related to race (univariate analyses only) and sexual orientation (both univariate and multivariable analyses) was significantly associated with perceptions of reduced access to urgent care. These findings highlight that identifying as a sexual minority

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man or transgender individual, as well as a racial/ethnic minority, adds another layer of discrimination affecting whether Latinos feel they can access health services when they need it.[8] Training for clinic staff and other health professionals on access issues related to racial/ethnic identity and sexual orientation is essential for the provision of quality care and for making clinics more inviting spaces for immigrant Latinos, including those who identify as sexual (or gender) minorities. Just as important will be communicating information about the availability of culturally competent care with Latino sexual minorities (both men and women) and transgender individuals who may have concerns about potential discrimination by providers.

Surprisingly, individuals living in areas defined as medically underserved were less likely to report poor or fair access to both urgent and non-urgent health care. These results, particularly in light of our findings about the importance of perceived discrimination, suggest that it may not be only the environment but the availability and quality (e.g., Spanish language, bicultural/bilingual services, and gay friendly) and innovative delivery (e.g., mobile units) of care in a particular area that are significant factors influencing perceptions of health care access. Safety-net providers, such as community health centers and free clinics, tend to play an important role in areas that receive designations as medically underserved. These types of providers may serve more immigrant Latinos (within and outside of MUAs) than other types of providers, resulting in Latino sexual minorities' increased comfort with seeking their services. Thus, perceptions of access may be greater in areas with more competent providers who are directly connected to the population than in areas with larger numbers of providers overall. It could also mean that the resources targeting these areas are not directly included in the MUA definition (e.g., provider ratio and poverty).[42] For instance, although a free clinic may not have a large number of providers or staff (MUA component), it may offer increased access for individuals living in that area, particularly within certain minority groups. Mobile clinics and temporary free clinics in both urban and rural and MUA and non-MUA areas may also help meet the unique needs of Latino communities. Further, while MUAs provide a useful tool in understanding context, our results suggest a need to rethink the idea of a medically underserved area to be inclusive of to whether or not it provides Latino-friendly health services that are accessible to sexual minorities.

The findings may be shaped by certain demographic characteristics of our study population. For example, Latinos in NC and other parts of the Southeast tend to be young,[3,15,52] and study participants reflected this overall trend. Sarmiento and colleagues[12] found that recently arrived immigrants were less likely to report forgoing needed care than U.S.-born Latinos, potentially due to different cultural understandings of health and illness. As groups become more acculturated to the U.S., their perceptions of disease severity and threshold for when care is needed may change. We did find that participants who had lived fewer years in NC were less likely to have received a routine check-up. Access issues may be even greater as participants may feel that they do not need care because they are young and healthy and, thus, may be less likely to report poor or fair access than other populations. This is problematic given the high rates of risk behaviors (e.g., substance use and low condom use) and low care behaviors (e.g., HIV testing). Furthermore, it is a matter of some concern that those participants reporting poorer overall health were also less likely to have received HIV

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testing, as that may be an indicator that they are not accessing other needed care. Future work with Latino sexual minorities is needed to explore what types of health services are needed to help increase preventive care behaviors, and to develop strategies to bring more recently arrived immigrants and those experiencing poorer overall health, in particular, into care.

Strengths and limitations

The use of CBPR allowed for a consideration of socio-demographic, contextual, and structural factors influencing care-seeking behaviors of Latino sexual minorites. This approach helped build trust among a particularly marginalized community that bears a disproportionate burden of disease[32,35] and resulted in extremely low rates of refusal. This is a distinct sample of Latinos living in NC with varied ages, genders, and time living in the U.S. Notably, there were 33 participants (18.3% of the sample) who identified as transgender. Given that immigrant Latino gay and bisexual men, MSM, and transgender people interact and include one another in their social networks, the inclusion of transgender individuals in combined studies is reasonable. However, with regard to health risk and access to care, transgender participants may constitute a different population worthy of a distinct study with future studies benefiting from narrower inclusion criteria to tease out the potentially different access barriers. The demographic characteristics of Latinos immigrating to NC tend to represent those coming to the southeastern U.S. more broadly; however, given the heterogeneity within some Latino communities, the generalization of the findings to other Latino populations or contexts may not be appropriate.

Future studies should examine the role of providers and clinics in facilitating the connection between Latinos, especially sexual minorities, and health services to explore current programs, needs, and gaps in services. For instance, it may be that clinics are trying to do more outreach to Latino communities and providing information in Spanish, yet there is a need for hiring more bilingual and bicultural staff, providing different types of outreach, and conducting training around sexual minority health needs. Further, the explicit focus on specific sub-groups (e.g., transgender) and contexts (e.g., urban, rural) will be important for improving Latino-friendly services and evaluating programs to improve health.

Conclusions

Given the burden of health issues affecting Latino communities in the southeastern U.S., it is essential to understand the multi-level factors affecting perceptions and actual care behaviors, particularly among sub-groups that may face additional barriers related to multiple stigmatized identities. This study represents a step in documenting the perceptions of health access and behaviors of immigrant Latino sexual minorities who represent a new trend in immigration to the southeastern U.S. The results of this study highlight the importance of changing structure and policy to support health and reduce medical costs (e.g., increasing preventive behaviors while reducing misuse of urgent care). To improve Latino sexual minorities' health care access and behaviors, the focus must include individual characteristics (e.g., demographic characteristics), clinic factors (e.g., competence of providers and clinic environment), and structural factors (e.g., discrimination related to racial and sexual identity). To reduce HIV-related and other health disparities experienced

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by Latinos, among other populations, we must move beyond models that explore individual behavior to include structural factors. As shown in this study, Latkin and colleagues'[29] dynamic social systems model may be useful in framing how structural factors interplay to affect access and behaviors, not only directly related to HIV prevention and care but also in other areas including primary care. Addressing these factors is complex but necessary to improve access, utilization, and health of this vulnerable, so-called *hard-to-reach*, and neglected population.

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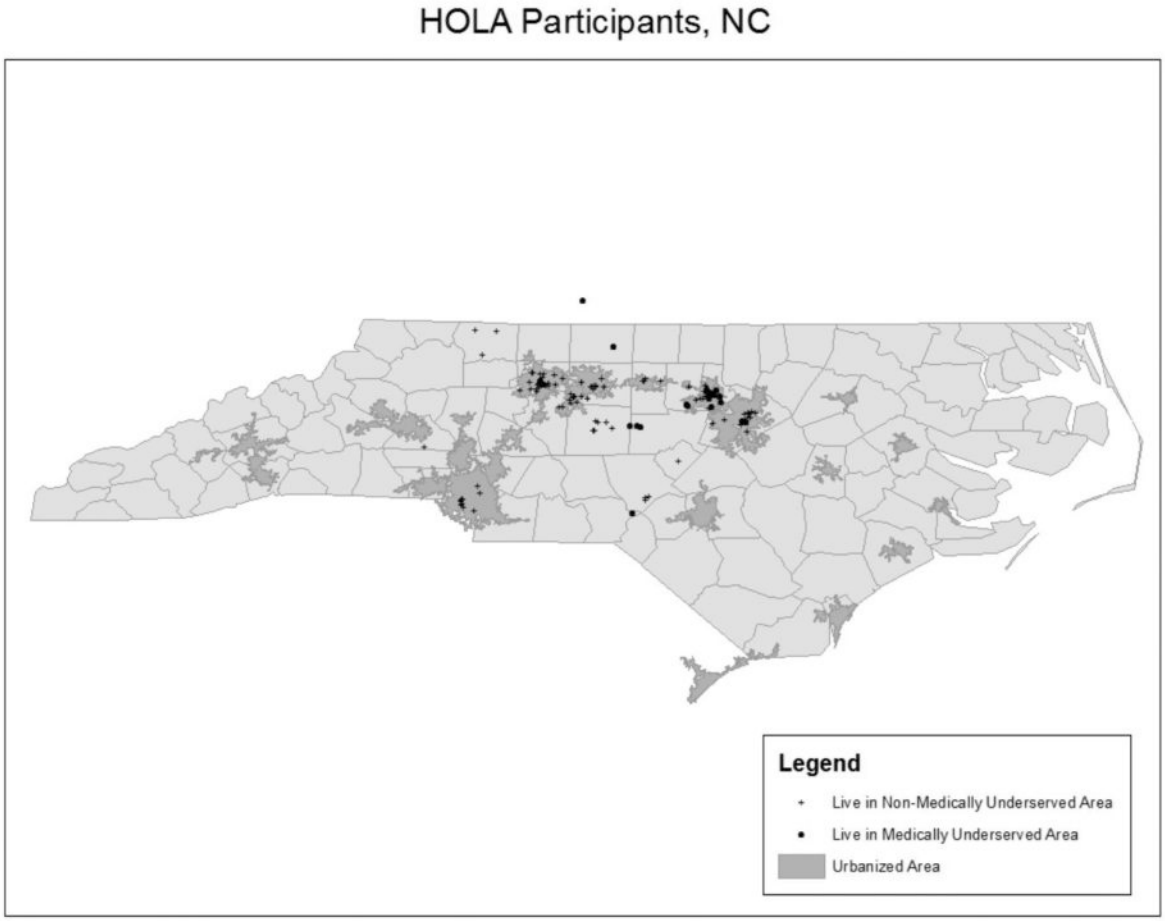

Figure 1. GIS Map of HOLA Participants Across North Carolina

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Table 1

Participant demographic and behavioral characteristics

	N[a] (%) or Mean (SD), Range
Age	30.1 (7.3), 18-61 years
Gender identity	
Male	147 (81.7)
Transgender	33 (18.3)
Education	
Less than high school	86 (50.3)
At least high school	85 (49.7)
Employment	
Employed year round	128 (74.8)
Employed seasonal, unemployed or other type of non-year-round employment	43 (25.2)
Years lived in NC	8.2 (4.5), 1-20
Relationship Status	
Single, not dating anyone special	82 (47.4)
Dating someone special, partnered or married but sex with others	32 (18.5)
Dating someone special, partnered or married and no sex with others	59 (34.1)
General health	2.4 (1.0), 1-5
Live in Medically Underserved Area	
Yes	43 (25.9)
No	123 (74.1)
Live in urbanized area	
Yes	138 (83.6)
No	27 (16.4)
How many times past 30 days, 5 drinks or more	
0	52 (32.7)
1	28 (15.5)
2+	78 (49.4)
Marijuana use past 6 months	
Yes	28 (15.6)
No	151 (84.4)
Cocaine use past 6 months	
Yes	
No	149 (82.8)
Number male sex partners past 6 months	

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	N[a] (%) or Mean (SD), Range
0	15 (9.1)
1	64 (39.0)
2+	85 (51.8)
Condom use most recent time anal sex	
Yes	58 (36.5)
No	101 (63.5)
Perceptions of access to urgent care	
Good or very good	93 (51.7)
Fair or poor	87 (48.3)
Perceptions of access to non-urgent care	
Good or very good	83 (46.1)
Fair or poor	97 (53.9)
HIV test in past 12 months	
Yes	103 (57.2)
No	77 (42.8)
Ever attending a general routine check-up	
Yes	153 (85.0)
No	27 (15.0)

[a]Category totals may vary because of missing data on individual variables.

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Table 2

Individual context variables

Scale	% or Mean (SD), Range	Alpha
Depression CES-D		
≥16	37.2%	0.85
Perceived racial discrimination	3.0 (2.7), 0-10	0.81
Sexual discrimination	2.0 (2.5), 0-8	0.88
Acculturation	25.3 (7.8), 12-52	0.87
Social Support		
Socio-emotional	28.4 (8.9), 9-45	0.94
Instrumental	27.4 (8.8), 9-45	0.96

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Table 3

Barriers to seeking health or medical care in past 12 months

Barriers	N[a] (%)
Macro-level barriers (α = 0.48)	**Mean = 0.93 (SD = 0.93), range = 0-3**
Distance to clinic	
Yes	32 (17.9)
No	147 (82.1)
Lack of transportation	
Yes	49 (28.2)
No	125 (71.8)
Immigration status	
Yes	88 (49.2)
No	91 (50.8)
Meso-level barriers (α = 0.63)	**Mean = 2.05 (SD=1.52), range = 0-5**
Availability/hours	
Yes	59 (33.9)
No	115 (66.1)
Language barrier	
Yes	62 (34.8)
No	116 (65.2)
Amount of time to get appointment	
Yes	64 (36.2)
No	113 (63.8)
Previous visits took too long	
Yes	72 (40.5)
No	106 (59.5)
High cost	
Yes	112 (62.6)
No	67 (37.4)
Micro-level barriers (α = 0.60)	**Mean = 1.82 (SD=1.59), range = 0-6**
Health insurance status	
Yes	51 (28.5)
No	128 (71.5)
Work (could not get time off)	
Yes	60 (33.7)
No	118 (66.3)

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Barriers	N[a] (%)
Lack of knowledge about where to obtain services	
Yes	67 (38.1)
No	109 (61.9)
Concerns about being treated poorly	
Yes	42 (23.7)
No	135 (76.3)
Perceptions about eligibility for health services	
Yes	56 (31.5)
No	122 (68.5)
Confidentiality concerns	
Yes	54 (30.2)
No	125 (69.8)

[a]Category totals may vary because of missing data on individual variable

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Table 4

Results from univariate and multivariate analyses for perceptions of urgent care access

Urgent Care Access Poor/Fair	Univariate			Multivariable		
	OR	95% CI	p-value	AOR	95% CI	p-value
Age	0.99	0.94, 1.03	0.549			
Educational attainment						
At least high school	0.67	0.36, 1.25	0.213*	0.65	0.33, 1.27	0.204
Less than high school	1.00			1.00		
Employment status						
Employed year round	0.49	0.24, 1.00	0.051*	0.69	0.32, 1.51	0.356
Other employment (seasonal, unemployed)	1.00			1.00		
Years lived in NC	0.96	0.90, 1.03	0.249*	0.98	0.92, 1.06	0.699
General health	1.03	0.73, 1.44	0.872			
Medically Underserved Area						
Yes	0.43	0.21, 0.89	0.023**	0.40	0.18, 0.87	0.021**
No	1.00			1.00		
Macro-level barriers	1.40	1.00, 1.95	0.048**	1.15	0.76, 1.75	0.508
Meso-level barriers	1.35	1.10, 1.65	0.004**	1.14	0.86, 1.50	0.353
Micro-level barriers	1.25	1.02, 1.52	0.028**	1.04	0.79, 1.36	0.791
Perceived racial discrimination	1.15	1.02, 1.30	0.018**	1.00	0.85, 1.18	0.972
Perceived sexual discrimination	1.22	1.07, 1.39	0.003**	1.20	1.00, 1.45	0.049**

*p<25,

**p<05

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Table 5

Results from univariate and multivariate analyses for perceptions of non-urgent care access

Non-Urgent Care Access Poor/Fair	Univariate			Multivariable		
	OR	95% CI	p-value	AOR	95% CI	p-value
Age	0.99	0.95, 1.04	0.854			
Educational attainment						
At least high school	0.70	0.38, 1.30	0.261			
Less than high school	1.00					
Employment status						
Employed year round	0.49	0.23, 1.03	0.060*	0.53	0.25, 1.14	0.105
Other employment (seasonal, unemployed)	1.00			1.00		
Years lived in NC	0.93	0.87, 1.00	0.054*	0.94	0.88, 1.01	0.108
General health	1.19	0.85, 1.66	0.304			
Medically Underserved Area						
Yes	0.43	0.21, 0.91	0.028**	0.41	0.20, 0.85	0.018**
No	1.00					
Macro-level barriers	0.98	0.70, 1.38	0.922			
Meso-level barriers	1.11	0.90, 1.37	0.328			
Micro-level barriers	1.03	0.85, 1.25	0.770			
Perceived racial discrimination	1.06	0.95, 1.19	0.295			
Perceived sexual discrimination	1.12	0.99, 1.27	0.075*	1.10	0.97, 1.26	0.142

*p<25,

**p<05

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Table 6

Results from univariate and multivariate analyses for HIV testing in past 12 months

HIV Test Past 12 Months	Univariate			Multivariable		
	OR	95% CI	p-value	AOR	95% CI	p-value
Age	0.98	0.94, 1.02	0.410			
Educational attainment						
At least high school	1.30	0.69, 2.45	0.420			
Less than high school	1.00					
Employment status						
Employed year round	0.80	0.38, 1.69	0.566			
Other employment (seasonal, unemployed)	1.00					
Years lived in NC	1.07	0.99, 1.15	0.072*	1.08	1.00, 1.16	0.051
General health	0.70	0.50, 0.97	0.034*	0.66	0.46, 0.93	0.017**
Medically Underserved Area						
Yes	1.03	0.49, 2.18	0.938			
No	1.00					
Macro-level barriers	0.82	0.58, 1.14	0.240*	0.95	0.64, 1.39	0.783
Meso-level barriers	0.85	0.69, 1.05	0.144*	0.88	0.70, 1.12	0.310
Micro-level barriers	0.94	0.77, 1.14	0.529			
Perceived racial discrimination	0.95	0.84, 1.07	0.421			
Perceived sexual discrimination	0.97	0.85, 1.10	0.626			

*p<25,

**p<05

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Table 7

Results from univariate and multivariate analyses for attending regular medical check-up

Never Regular Check-Up	Univariate			Multivariable		
	OR	95% CI	p-value	AOR	95% CI	p-value
Age	0.99	0.93, 1.05	0.651			
Educational attainment						
At least high school	0.45	0.18, 1.15	0.095*	0.50	0.19, 1.34	0.168
Less than high school	1.00			1.00		
Employment status						
Employed year round	1.20	0.44, 3.22	0.720			
Other employment (seasonal, unemployed)	1.00					
Years lived in NC	0.85	0.76, 0.94	0.003**	0.84	0.75, 0.94	0.004**
General health	1.36	0.84, 2.19	0.207*	1.43	0.85, 2.43	0.178
Medically Underserved Area						
Yes	0.31	0.09, 1.11	0.072*	0.36	0.10, 1.32	0.124
No	1.00			1.00		
Macro-level barriers	1.25	0.82, 1.92	0.296			
Meso-level barriers	0.93	0.70, 1.22	0.590			
Micro-level barriers	1.17	0.91, 1.51	0.230*	1.12	0.84, 1.49	0.426
Perceived racial discrimination	1.01	0.87, 1.18	0.852			
Perceived sexual discrimination	1.09	0.93, 1.28	0.282			

*p<25,

**p<05